

# 13



OIPE

## RAW SEQUENCE LISTING

DATE: 09/01/2004

PATENT APPLICATION: US/09/825,423C

TIME: 17:20:04

Input Set : A:\ID01152 Sequence Listing.txt

Output Set: N:\CRF4\09012004\I825423C.raw

3 <110> APPLICANT: Weber, Patricia C.  
 4 Reichert, Paul  
 5 Madison, Vincent S.  
 6 Wyss, Daniel  
 7 Yao, Nanhua  
 8 Liu, Dingjiang  
 9 Gesell, Jennifer  
 11 <120> TITLE OF INVENTION: Hepatitis C Virus NS3 Helicase Fragments  
 13 <130> FILE REFERENCE: ID01152 US  
 15 <140> CURRENT APPLICATION NUMBER: US 09/825,423C  
 16 <141> CURRENT FILING DATE: 2001-04-03  
 18 <150> PRIOR APPLICATION NUMBER: US 60/194,419  
 19 <151> PRIOR FILING DATE: 2000-04-04  
 21 <160> NUMBER OF SEQ ID NOS: 16  
 23 <170> SOFTWARE: PatentIn Ver. 2.1  
 25 <210> SEQ ID NO: 1  
 26 <211> LENGTH: 631  
 27 <212> TYPE: PRT  
 28 <213> ORGANISM: Hepatitis C virus  
 30 <400> SEQUENCE: 1  
 31 Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly Cys  
 32 1 5 10 15  
 34 Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu  
 35 20 25 30  
 37 Val Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Cys Ile  
 38 35 40 45  
 40 Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile  
 41 50 55 60  
 43 Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Gln  
 44 65 70 75 80  
 46 Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro  
 47 85 90 95  
 49 Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp  
 50 100 105 110  
 52 Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser  
 53 115 120 125  
 55 Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu  
 56 130 135 140  
 58 Cys Pro Ala Gly His Ala Val Gly Leu Phe Arg Ala Ala Val Cys Thr  
 59 145 150 155 160  
 61 Arg Gly Val Thr Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu Glu  
 62 165 170 175  
 64 Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala

## RAW SEQUENCE LISTING

DATE: 09/01/2004

PATENT APPLICATION: US/09/825,423C

TIME: 17:20:04

Input Set : A:\ID01152 Sequence Listing.txt

Output Set: N:\CRF4\09012004\I825423C.raw

```

65          180          185          190
67 Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser
68          195          200          205
70 Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys
71          210          215          220
73 Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala
74 225          230          235          240
76 Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val
77          245          250          255
79 Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys
80          260          265          270
82 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile
83          275          280          285
85 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly
86          290          295          300
88 Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu
89 305          310          315          320
91 Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile
92          325          330          335
94 Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys
95          340          345          350
97 Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys
98          355          360          365
100 His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu
101          370          375          380
103 Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile
104 385          390          395          400
106 Pro Thr Asn Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr
107          405          410          415
109 Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val
110          420          425          430
112 Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr
113          435          440          445
115 Thr Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg
116          450          455          460
118 Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu
119 465          470          475          480
121 Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp
122          485          490          495
124 Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg
125          500          505          510
127 Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His
128          515          520          525
130 Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala
131          530          535          540
133 His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Phe Pro Tyr Leu
134 545          550          555          560
136 Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro
137          565          570          575

```

## RAW SEQUENCE LISTING

DATE: 09/01/2004

PATENT APPLICATION: US/09/825,423C

TIME: 17:20:04

Input Set : A:\ID01152 Sequence Listing.txt

Output Set: N:\CRF4\09012004\I825423C.raw

```

139 Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu
140          580          585          590
142 His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu
143          595          600          605
145 Val Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Thr Cys Met Ser
146          610          615          620
148 Ala Asp Leu Glu Val Val Thr
149 625          630
153 <210> SEQ ID NO: 2
154 <211> LENGTH: 4
155 <212> TYPE: PRT
156 <213> ORGANISM: Artificial Sequence
158 <220> FEATURE:
159 <223> OTHER INFORMATION: Mutated Hepatitis C virus peptide
161 <400> SEQUENCE: 2
162 Ser Asp Gly Lys
163 1
167 <210> SEQ ID NO: 3
168 <211> LENGTH: 148
169 <212> TYPE: PRT
170 <213> ORGANISM: Hepatitis C virus
172 <400> SEQUENCE: 3
173 Gly Ser His Met Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala
174 1          5          10          15
176 Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser
177          20          25          30
179 Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys
180          35          40          45
182 Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala
183          50          55          60
185 Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val
186 65          70          75          80
188 Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys
189          85          90          95
191 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile
192          100          105          110
194 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly
195          115          120          125
197 Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu
198          130          135          140
200 Ala Thr Ala Thr
201 145
205 <210> SEQ ID NO: 4
206 <211> LENGTH: 142
207 <212> TYPE: PRT
208 <213> ORGANISM: Hepatitis C virus
210 <400> SEQUENCE: 4
211 Gly Ser His Met Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu
212 1          5          10          15

```

## RAW SEQUENCE LISTING

DATE: 09/01/2004

PATENT APPLICATION: US/09/825,423C

TIME: 17:20:04

Input Set : A:\ID01152 Sequence Listing.txt

Output Set: N:\CRF4\09012004\I825423C.raw

```

214 Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile
215          20          25          30
217 Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser
218          35          40          45
220 Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile
221          50          55          60
223 Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr
224          65          70          75          80
226 Asn Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Phe
227          85          90          95
229 Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Ser Asp Gly Lys
230          100          105          110
232 Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg
233          115          120          125
235 Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg
236          130          135          140
240 <210> SEQ ID NO: 5
241 <211> LENGTH: 288
242 <212> TYPE: PRT
243 <213> ORGANISM: Hepatitis C virus
245 <400> SEQUENCE: 5
246 Gly Ser His Met Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala
247   1          5          10          15
249 Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser
250          20          25          30
252 Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys
253          35          40          45
255 Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala
256          50          55          60
258 Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val
259   65          70          75          80
261 Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys
262          85          90          95
264 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile
265          100          105          110
267 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly
268          115          120          125
270 Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu
271          130          135          140
273 Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile
274 145          150          155          160
276 Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys
277          165          170          175
279 Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys
280          180          185          190
282 His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu
283          195          200          205
285 Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile
286          210          215          220

```

## RAW SEQUENCE LISTING

DATE: 09/01/2004

PATENT APPLICATION: US/09/825,423C

TIME: 17:20:04

Input Set : A:\ID01152 Sequence Listing.txt

Output Set: N:\CRF4\09012004\I825423C.raw

```

288 Pro Thr Asn Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr
289 225                230                235                240
291 Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Ser Asp
292                245                250                255
294 Gly Lys Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr
295                260                265                270
297 Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg
298                275                280                285

```

305 &lt;210&gt; SEQ ID NO: 6

306 &lt;211&gt; LENGTH: 241

307 &lt;212&gt; TYPE: PRT

308 &lt;213&gt; ORGANISM: Hepatitis C virus

310 &lt;400&gt; SEQUENCE: 6

```

311 Gly Ser His Met Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala
312 1      5      10      15
314 Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser
315                20      25      30
317 Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys
318                35      40      45
320 Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala
321                50      55      60
323 Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val
324 65      70      75      80
326 Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys
327                85      90      95
329 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile
330                100     105     110
332 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly
333                115     120     125
335 Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu
336                130     135     140
338 Ala Thr Ala Thr Pro Pro Gly Ser Gly Met Phe Asp Ser Ser Val Leu
339 145     150     155     160
341 Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala
342                165     170     175
344 Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro
345                180     185     190
347 Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu
348                195     200     205
350 Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu
351                210     215     220
353 Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala
354 225     230     235     240
356 Gln

```

361 &lt;210&gt; SEQ ID NO: 7

362 &lt;211&gt; LENGTH: 4

363 &lt;212&gt; TYPE: PRT

364 &lt;213&gt; ORGANISM: Artificial Sequence

366 &lt;220&gt; FEATURE:

**VERIFICATION SUMMARY**

DATE: 09/01/2004

PATENT APPLICATION: US/09/825,423C

TIME: 17:20:05

Input Set : A:\ID01152 Sequence Listing.txt

Output Set: N:\CRF4\09012004\I825423C.raw